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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/529,747	03/30/2005	Eiichi Takahashi	040894-7203	1586
9629 7590 07/27/2007 MORGAN LEWIS & BOCKIUS LLP 1111 PENNSYLVANIA AVENUE NW WASHINGTON, DC 20004			EXAMINER STAFFORD, PATRICK	
			ART UNIT	PAPER NUMBER
			2828	
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			07/27/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/529,747

Applicant(s)

TAKAHASHI ET AL.

Examiner

Patrick Stafford

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 April 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 3/30/2005
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Arguments***

Applicant's arguments filed 30 April 2007 have been fully considered but they are not persuasive. Grasyuk and Takahashi do not teach away from each other. Grasyuk teaches advantages for using different amplification methods. Takahashi teaches one of the amplification methods Grasyuk mentions in order to improve the contrast at a front part of the pulse. The motivation to combine these two references still stands.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grasyuk et al (Compression of light pulses by stimulated Raman scattering without a frequency shift" Sov. J. Quantum Electron., vol. 19, no. 8) in view of Takahashi et al (JP 2002-62553, hereafter '553).

Claims 1 and 4: Grasyuk teaches a method for generating an ultrashort pulse (paragraph 1), comprising the steps of:

converting a laser pulse once into a laser pulse having another wavelength and reconvert the laser pulse having another wavelength into a laser pulse having the initial wavelength (paragraph 4 and Fig. 1).

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Grasyuk teaches the example of amplification in a pulse generating system (paragraph 12), however it does not explicitly teach it in conjunction with converting and reconvert the laser pulse. Takahashi '553 teaches saturation amplifying the pulse by a laser to generate an ultrashort pulse to improve the contrast at a front part of the pulse (paragraph 5). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use saturation amplification in conjunction with converting and reconvert the laser in order to improve the contrast at a front part of the pulse.

Claim 2: Grasyuk teaches the method of claim 1, as discussed above, wherein the laser is an excimer laser (paragraph 1).

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grasyuk in view of Takahashi '553, as applied to claim 2 above, and further in view of Holmes (U.S. Patent 4,812,682, hereafter '682).

Grasyuk and Takahashi '553 teach the method of claim 2, as discussed above, wherein the laser pulse is converted into a pulse having another wavelength by performing stimulated Raman scattering (Grasyuk, paragraph 2). They do not explicitly teach the reversion of the pulse to a pulse having the initial wavelength being performed by four-wave mixing. Holmes '682 teaches it is suitable to use four-wave mixing to reconvert the pulse to a pulse having the initial wavelength (col. 4, lines 17-25 and col. 4, lines 29-31). The selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). Therefore it

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would have been obvious to one of ordinary skill in the art at the time the invention was made to use four-wave mixing to reconvert the pulse to a pulse having the initial wavelength.

Claims 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grasyuk in view of Takahashi '553 and further in view of Holmes (U.S. Patent 4,812,682, hereafter '682).

Claims 5-6 and 8: Grasyuk teaches an ultrashort pulse generating apparatus, comprising:

an excimer laser (paragraph 1);

a laser pulse is once converted into a laser pulse having another wavelength (paragraph 4 and Fig. 1);

the laser pulse having another wavelength is reconverted into a laser pulse having an initial wavelength (paragraph 4 and Fig. 1).

Grasyuk teaches the example of amplification in a pulse generating apparatus (paragraph 12), however it does not explicitly teach it in conjunction with converting and reconvert the laser pulse. Takahashi '553 teaches saturation amplifying the pulse by a laser to generate an ultrashort pulse to improve the contrast at a front part of the pulse (paragraph 5). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use saturation amplification in conjunction with converting and reconvert the laser in order to improve the contrast at a front part of the pulse.

Grasyuk and Takahashi '553 do not explicitly teach the use of a ( $\lambda/4$ )-wavelength plate and a polarizer. However, Holmes '682 teaches the use of a polarizer and ( $\lambda/4$ )-wavelength plate in an ultrashort pulse generating apparatus would be suitable (col. 4, lines 16-31). The selection of something based on its known suitability for its intended use has been held to support a *prima*

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*facie* case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a polarizer and ( $\lambda/4$ )-wavelength plate in an ultrashort pulse generating apparatus.

Claim 7: Grasyuk, Takahashi '553 and Holmes '682 teach the apparatus of claim 5, as discussed above. Grasyuk teaches the laser pulse being converted into a pulse having another wavelength by performing stimulated Raman scattering (Grasyuk, paragraph 2). Holmes '682 teaches the reconversion of the pulse to a pulse having the initial wavelength by four wave mixing (col. 4, lines 17-31).

### ***Conclusion***

1. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick Stafford whose telephone number is (571) 270-1275. The examiner can normally be reached on M-Th 7:30-5 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MinSun Harvey can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RS

PJS

MINSUN OH HARVEY  
PRIMARY EXAMINER